CLAIMS

What is claimed is:

1. A video recording device for capturing video frame data in response to a trigger event, said recording device comprising:

at least one image sensor operative to produce an output frame data signal representative of video images impinging said at least one sensor;

a central control processor having inputs for receiving video frame data and an input for receiving a trigger signal;

a converter coupled between said image sensor and said central control processor and operative to convert said output frame data signal a video frame data signal and to communicate said video frame data signal to said central control processor;

a semiconductor memory employed as a circular buffer memory, said semiconductor memory in electrical communication with said central control processor, said semiconductor memory having a plurality of locations for storing a corresponding plurality of frames comprising frame data corresponding to portions of said video frame data signal;

said central control processor being operative to store respective frames in successive ones of said locations of said circular buffer memory in the absence of said trigger signal and to store respective frames only in a predetermined number of successive locations of said circular buffer memory following receipt of said trigger signal.

2. The video recording device of claim 1 wherein said device further includes a sensor operative to produce said trigger signal.

3. The video recording device of claim 2 wherein said sensor comprises an accelerometer.

4. The video recording device of claim 1 wherein said device further includes a capture switch and said device is operative to store only a predetermined number of frames within said semiconductor memory following user activation of said capture switch.

5. The video recording device of claim 1 wherein said device is further operative to store data representative of a single video frame within said semiconductor memory upon user activation of a switch.

6. The video recording device of claim 1 wherein said central control processor is further operative to compress video frame data prior to the storage of respective frames within said

semiconductor memory.

7. The video recording device of claim 1 wherein said central control processor is capable of storing frames in said semiconductor memory at a first frame rate and a second frame rate, said processor being operative to store frames in said semiconductor memory at said first frame rate prior to said trigger event and being operative to store said frames in said semiconductor memory at said second frame rate subsequent to said trigger event.

8. The video recording device of claim 7 wherein said second frame rate is greater than said first frame rate.

9. The video recording device of claim 7 wherein said central control processor is operative to store frame data only in approximately one-half the number of said plurality of frame locations contained in said semiconductor memory following receipt of said trigger signal.

10. The video recording device of claim 1 wherein said video recording device includes plural image sensors coupled to said central control processor through said converter and each sensor is operative to produce a respective output frame data signal representative of video images impinging the respective sensor, wherein said semiconductor memory is structured as a plurality of circular buffer memories corresponding in number to said plurality of image sensors and wherein said central control processor is operative to continue to store frames representative of the respective video images impinging respective ones of said image sensors in successive ones of said frame locations of said plurality of circular buffer memories in the absence of said trigger signal and to store said frames only in a predetermined number of successive locations of said circular buffer memories following receipt of said trigger signal.

11. The video recording device of claim 1 wherein said image sensor comprises a charge coupled device.

12. The video recording device of claim 11 wherein said device further comprises a lens selectively positioned so as to focus a video image on said image sensor and cover a predetermined viewing angle.

13. The video recording device of claim 1 wherein said image sensor comprises an artificial retina.

14. The video recording device of claim 13 wherein said device further comprises a lens selectively positioned so as to focus a video image on said artificial retina and cover a predetermined viewing angle.

15. A method for recording video frames in response to a trigger signal comprising the steps of:

receiving at an image sensor, video frame images and producing an image sensor output signal representative of said received video frame images;

converting said image sensor output signal to digital video signals, wherein a predetermined number of said video signals comprise a frame;

continuing to store data corresponding to successive frames in a semiconductor buffer memory in the absence of the detection of said trigger signal by a central control processor; and

storing a plurality of frames in said semiconductor buffer memory subsequent to the detection of said trigger signal by said central control processor.

16. The method of claim 15 further comprising the step of compressing said digital video signals prior to storing said frames in said semiconductor buffer memory.

17. The method of claim 16 wherein said compressing step comprises the step of compressing said digital video signals with an asymmetric compression routine prior to storing said frames in said semiconductor buffer memory.

18. The method of claim 16 further comprising the step of encrypting said digital video signals prior to storing said frames in said semiconductor buffer memory.

19. The method of claim 15 further comprising the steps of:

storing said frames in said semiconductor buffer memory at a first frame rate prior to detection of said trigger event; and

storing said frames in said semiconductor buffer memory at a second frame rate subsequent to the detection of said trigger event.

20. The method of claim 19 wherein said second storing step comprises the step of storing said frames in said semiconductor buffer memory at said second frame rate subsequent to the detection of said trigger event, wherein said second frame rate is greater than said first frame rate.

21. The method of claim 19 wherein said second storing step comprises the step of storing said frames in said semiconductor buffer memory at said second frame rate subsequent to the detection of said trigger event, wherein said second frame rate is less than said first frame rate.

22. A method for storing data in a storage device having a plurality of storage buffers comprising the steps of:

successively receiving a plurality of data samples;

segregating said storage buffers into a plurality of groups (1 through n) of storage buffers, wherein each of said groups includes at least one buffer; and

storing a smaller number of data samples in each successive group of storage buffers per unit interval of time.

23. The method of claim 22 wherein said segregating step comprises the step of segregating said storage buffers into a plurality of groups (1 through n) of storage buffers and wherein each group is organized as a group of circular storage buffers and wherein said storing step comprises the step of storing selected ones said successively received data samples in successive storage locations within each of said groups of storage buffers.

24. The method of claim 23 wherein said storing step comprises the step of storing one of said received data samples in a selected one of said groups following the storage of a predetermined number of data samples in the preceding group.

25. The method of claim 24 wherein said storing step comprises the step of storing one of said received data samples in a selected on of said groups following the storage of a first predetermined number of data samples in the preceding group and storage of a second predetermined number of data samples in the first group (group 1) of said storage buffers.

26. The method of claim 25 wherein said storing step comprises the step of storing one of said received data samples in a selected one of said groups following the storage of two (2) data samples in the preceding group and storage of two (2) data samples in the first group (group 1) of said storage buffers.

27. The method of claim 22 further comprising the step of ceasing to store data samples in each respective group upon storage of a predetermined number (P_n) of data samples within the respective group, where n corresponds to the number of the respective group.

28. The method of claim 27 wherein said successively receiving step comprises the step of successively receiving a plurality of data samples wherein each of said data samples corresponds to a video frame.

29. A method for storing data in a storage device having a plurality of storage buffers comprising the steps of:

successively receiving a plurality of data samples;

segregating said storage buffers into first and second buffer pool portions having n buffers n in each portion, wherein each buffer pool portion includes at least two buffer;

generating successive gray codes having a plurality of bit locations with a gray code generator, wherein only one of said bit locations changes in successive codes;

storing successively received data samples in a selected one of buffers in the first buffer pool portion specified by a buffer location address associated with the changed gray code bit location prior to receipt of a trigger event.

30. The method of claim 29 further comprising the steps of storing successively received data samples in a selected one of buffers in the second buffer pool portion specified by a buffer location address associated with the changed gray code bit location after receipt of said trigger event; and

suppressing writes to each buffer location within said second buffer pool which has been previously written to subsequent to said trigger event.

31. The method of claim 30 further comprising the steps:

cycling through said gray codes once subsequent to said trigger event; and

terminating writing to said second buffer pool following said cycling step.